THE

CHANNEL TUNNEL

BY A MILITARY RAILWAY EXPERT

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Among the objections raised against the construction of the Channel Tunnel, the most insistent has been the risk of invasion which some people suppose it would create against England.

It is said that through the Tunnel, either Germany or France could quite suddenly send a troop of determined men to take possession of the English head of the Tunnel, thus admitting, under their protection, bodies of organised and fully armed troops, who would establish themselves firmly in a somewhat more extended circle round the mouth of the Tunnel, and thus facilitate the invasion of England.

The persons who have suggested this danger have not failed to point out that any plans for mining arrangements to destroy the entrance to the Tunnel, or even plans for flooding the Tunnel itself, would not give security in this respect, as one can never be sure that arrangements of the kind would work, seeing that the person in charge might not have the necessary judgment for performing his duties at the critical moment, and might act either too soon (which would involve a grave moral responsibility) or too late, and so cause a disaster to England.

England's fears on this subject, if they were well founded, would be too legitimate for the promoters not to have been fully alive to the fact that perfect safety for England must be indubitably assured. They have, therefore, in order to establish this certainty, never trusted to mining arrangements, the action of which may depend more or less on delicate apparatus, that could not often be tried, and would be dependent for its use on one man only.

The effective methods of preventing the Tunnel from being of advantage to an invader from either side of the Channel are, however, of a totally different character.

From the technical point of view, the promoters of the Bill now before Parliament propose the following measures for the protection of the Tunnel and its approaches:—

1. On the French coast, the entrance to the Tunnel has been marked out at about one mile towards the west of the Cran d'Escalles in the cliffs, called the Blanc-Nez, about 33 feet above the mean level of the sea, that is to say, at a point visible from the warships *cruising in the Channel.* At the egress of the Tunnel out of the cliff, the railway would be continued by a viaduct 900 yards in length, and 46 feet in height above the almost perpendicular groove running up to the cliffs—in other words, placed in such a position that warships in the Channel could demolish it by a few cannon shots and, in consequence of the obliquity of the viaduct in relation to the coast, prevent it being repaired or reconstructed, under the fire of the warships which had destroyed it.

2. On the English side, the entrance to the Tunnel would be located behind the spur of the cliff situated to the west of Dover, which extends as far as the harbour, narrowing the entrance to the valley from the sea. This access occupies such a position (it is sufficient to see the relief model to be convinced of this) that it would be under the direct fire of three forts or batteries. Two of these, the Citadel and the Western Heights, stand on the spur, at 1,300 yards and 1,750 yards distance respectively from the opening, and the third at the rear of Dover Castle at more than two miles distance, that is to say, sufficiently far away to render absolutely inadmissible the hypothesis that these forts could fall immediately into the possession of an invader.

Even supposing that the period of political tension which inevitably precedes a declaration of war should not have served as sufficient warning to awakening the vigilance of the forts, it is impossible that at the end of a few hours one of these three forts, at least, should not have its attention drawn to the fact that an enemy had taken possession of the Tunnel and should not bring

artillery fire to bear upon it, which would render it impracticable for trains to pass, and destroy any enemy's forces that might have already obtained a footing.

3. The authors of the project have decided that in the Tunnel, or rather between the two stations connected by the Tunnel (Wissant on the French side, Maxton on the English side), electricity would be the motive power of the trains. The submarine railway would, in reality, consist of two separate tunnels, *one of which would serve for working the trains going from England to France and the other for the trains going from France to England.*

In consequence of the somewhat narrow section of each at these two Tunnels steam traction would be impracticable, inasmuch as after two or three trains had passed the air would be foul, the visibility obstructed, and the keeping up of the locomotive fires very difficult. It is therefore necessary that electric traction should be adopted. It is suggested that the traction from England to France should be effected from a powerful generating station in France, situated at Sangatte, five miles from Wissant Station, and that the traction from France to England should be supplied from a corresponding generating station erected in England, a mile or two from Maxton Station, where the electric traction would cease. Normally, it would be the English current that would put in motion the trains going from France to England. It would, therefore, be an absolute impossibility for trains to come from France to England without the co-operation of the British authorities.

4. It is proposed that the new stations at Wissant and Maxton shall be constructed with a small number of short platforms, about 600 to 650 feet long, incapable of accommodating military trains, the length of which is not less than 1,300 to 1,400 feet, so that troops could be detrained only amid enormous difficulties, except with the assistance of the invaded country.

A series of concerted plans have thus been contrived, any one of which would be sufficient to paralyse the invader. But let us take the most improbable hypothesis, and admit that difficulties arose between England, France and Germany which might result in war.

In case of war with Germany, it will be readily admitted that the

Germans would not crush the French within a few hours, and that before the foremost German troops arrived at Calais, or rather at Wissant, there would be some time to spare, during which the French viaduct could be destroyed, the electric cables cut, the generating stations rendered useless, and the trains prevented from starting.

Supposing the war were with France, and that she wished to send to England an army corps, probably taken from the region of the North—that is to say, in the district nearest the Tunnel—a body of this kind, containing not more than 30,000 to 35,000 combatants, would require, in order to be so transported, from 140 to 150 trains, each of 45 to 50 coaches, or, in other words, about 7,000 vehicles and 150 locomotives.

No one can believe that at the full period of political tension a nation could do what is impossible in times of profound peace—to mobilise and concentrate 30,000 to 35,000 men, with horses, guns, vehicles of all sorts, ammunition, and provisions, without attracting attention in England.

Let us, however, admit this improbability, and acknowledge that, by means of a group of men, necessarily few in number, exceptionally determined, and arriving like ordinary travellers, the French had taken possession of the head of the Tunnel at Dover, on a night so foggy that the forts could not see the exit from the Tunnel. Let us also admit that the garrison of these forts, warned by telephone connected with Dover or the stations, or otherwise by messengers—in case the telephone were not available—failed to open fire upon an invisible object. Supposing, further, that during several hours—say six, or even 12 hours—they should abstain from firing. What could the French bring in by means of the Tunnel during that period?

It has been shown that to convey a single army corps, with its cavalry, artillery, staff, victualling supplies and ammunition—35,000 combatants fully armed and in a fighting condition—would require about 150 trains. The time necessary for unloading a military train is about two to three hours, *with stations well combined and platforms organised for the purpose*. It would require, therefore, not less than 300 to 450 hours, *i.e.*, from 12½ to 20 days, for effecting such transport, and even then the operation

would be contingent upon the force not being disturbed on its arrival, and that the movement proceeded night and day without cessation. As proper stations and platforms suitable for military requirements would not exist at the end of the Tunnel, a much longer time, of course, would be necessary.

But this is not all: 150 trains each 1,400 feet in length coming out of a tunnel under such conditions—each train being obliged, when it had been emptied, to make room for those following—would necessitate, in the first place, steam locomotives for taking them away, and, on the other hand, would require a length of available rails of 42 miles.

Does not the mere statement of such figures suffice to show that if we suppose all existing means of defence useless, an operation of this nature could not be attempted with the least chance of success. It may be asserted, on the contrary, that such attempts would be frustrated from the commencement, and that the invader would be crushed by the smallest number of troops, who would have several days to collect, to concentrate, and even to fight, supposing that the garrison of Dover had not annihilated the first two or three trains as they commenced to unload.

The legend of a tunnel "resembling the crater of an active volcano, hurling forth, without stoppage, torrents of men, horses and guns, directed towards London," surely need not be taken into consideration.

All this is mere fancy—an absolute impossibility. It is, indeed, the contrary which is true. The Tunnel could never serve for invading England, whilst it would be of immense benefit to her in case of a naval war with a power such as Germany, or any other, because it would permit the conveyance of provisions, and especially food supplies, which England would be obliged otherwise to receive oversea by means of vessels, for whose protection she would be compelled to devote an important portion of her sea forces.

Finally, in case of a war in which France were England's ally, the Tunnel would serve for transporting reinforcements of British troops, and would, without doubt, turn the balance in favour of the friendly and allied nations.

If these facts are duly weighed, and the variety and power of the means by which the entrances of the Tunnel could be defended are considered—if we take into account the impossibility of transporting into England even a small number of troops, without running the risk of having them at once annihilated—we shall understand the force of the opinion expressed by the celebrated Marshal von Moltke, that the Tunnel "should not be made, as it would not serve for invading England, but would be fatal to Germany in case of a conflict in which that power might be engaged."

LONDON,
March, 1907.